

It should be clearly understood that strong damping by *friction* is fundamentally undesirable, since *all* small waves are lost altogether, and large motions are only slightly controlled by the friction. Strong damping, even if of a nature that satisfies the equation given above, is still undesirable, because small *slow* waves are likely to be lost altogether, and larger slow ones are not sufficiently magnified. Nevertheless, when the damping is of this sort, and its magnitude ϵ in the equation is known, we can compute under certain favorable conditions the actual magnitude of the ground movements. Finally, when friction and damping are both quite small, the instrument is highly sensitive to all minute disturbances, especially motions of nearly its own period. Such motions, however, are likely to be recorded on a greatly exaggerated scale. In general, the deductions and conclusions from a record made on a frictionless instrument of moderate period only slightly damped must be very carefully drawn. The steady mass in these cases acquires certain of the properties of "sensitive masses" previously mentioned.

Galitzin has greatly developed and employed electro-magnetic devices for damping, and for this purpose attaches to the steady mass one or more heavy copper plates, which are free to move between the poles of an electro-magnet. When the magnet is energized, movements of the steady mass are more or less strongly damped by the generation of electric currents in the copper plates. By a suitable disposition of this apparatus the same investigator causes the electric currents thus generated to record photographically the character of the motion. As the *velocity* of the relative motion of the ground and the steady mass, not the *displacement*, is shown by the electric recorder, it seems the data furnished by such records are not in the most convenient form.

The work of the present writer has thus far been directed very largely to the best methods of constructing the seismograph so as to secure what he has called earthquake-proof construction, universality, the longest practicable periods, etc., thereby reducing the necessity for damping to a minimum. It is intended, however, later on to investigate fully the effect of different forms and degrees of damping on actual instruments of the new design.

From a superficial examination of various actual records and effects from ordinary instruments, I find the damping often differs very widely in character from that represented by the logarithmic equation given above, and can not be represented by a simple exponent ϵ , such as is often employed in the reduction of observations. The subject is one requiring very careful attention.

PUBLICATION OF CLIMATOLOGICAL DATA FROM COOPERATIVE OBSERVERS.

It is anticipated that beginning with the issue of January, 1908, Table II and Table III will be omitted from the MONTHLY WEATHER REVIEW.

Those desiring the data hitherto published in Table II for any State or Territory, or group of States, or for the whole country, may obtain them in the monthly reports of the appropriate section or sections of the Climatological Service of the Weather Bureau. Application for such reports may be addressed to "Chief U. S. Weather Bureau, Washington, D. C., for the Climatological Division", or to the officials in charge at the proper section centers.

THE WEATHER OF THE MONTH.

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PRESSURE.

The distribution of mean atmospheric pressure for November, 1907, over the United States and Canada, is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and V.

From October to November there is normally a substantial increase in the sea-level pressure over practically all portions of the United States and Canada, the increase being greatest over the interior districts, owing to the more rapid cooling of the continental area than of the districts near the seacoasts.

The increase in pressure during November over that for October, 1907, was more than twice the average over the central portions of the Plateau district, while over the Lake region, Ohio Valley, and middle Atlantic coast districts there was a pronounced decrease in the mean pressure as compared with the preceding month.

Over practically all districts in the United States from the Lake region and Ohio and lower Mississippi valleys westward to the Pacific the monthly mean pressure exceeded the normal, attaining the maximum over the central Rocky Mountain and Plateau districts, where an average pressure of more than 30.20 inches was maintained. Pressure was also comparatively high over the extreme eastern Canadian Provinces and over the lower Colorado Valley and the surrounding districts of Arizona and California. Over portions of the Lake region and the Atlantic coast districts from New England to Florida there was a small deficiency in pressure. Pressure was also below normal over the Canadian Northwest Territories, where at Edmonton the lowest mean pressure for the month, 29.90 inches, was maintained.

The distribution of pressure was such as to give a decided preponderance of northerly surface winds over the Atlantic and Gulf States, while along the northern border from North Dakota westward southerly winds modified the weather and ex-

tended their influence far to the northward over the Canadian Northwest Provinces.

The eastward movements of the areas of high and low pressure across the country were along paths generally south of the normal course, and large portions of the upper Mississippi and Missouri valleys and the slope region were not under the influence of any decided storm movement during the month. As a result of the southward trend of the storm tracks, the wind movement along the Gulf and Atlantic coasts was in excess of the normal, while over the districts from the middle Mississippi Valley westward there was a general diminution of wind movement, which was especially pronounced over the southern slope, where the velocities of the wind ranged from 10 to 40 per cent less than the average.

TEMPERATURE.

The unusual congestion of areas of high and low pressure over the Gulf States and the preponderance of northerly winds, with an excess of cloud and rain, brought unseasonably cold weather over the greater part of Texas and the southern portions of the cotton-growing States. Temperature was also below the normal over the lower Lake region, the Ohio Valley, and the Atlantic coast States from Florida to southern New England. Over the upper Lakes, the upper Mississippi and Missouri valleys, the districts west of the Rocky Mountains, and the Canadian Northwest Territories the average temperature for the month was uniformly above the normal.

Over the States from Minnesota westward to Idaho and in the adjoining Canadian Provinces the average temperature ranged from 6° to 10° above the normal. No severe cold was experienced and outdoor occupations were pursued thruout the month without interruption. Temperature was also somewhat above the normal over central New England and Florida, and it was unusually warm over portions of southern California. Maximum temperatures between 80° and 90° oc-